

## **Study Gist:**

**Study Title.** Building an Object Model of a Legacy Simulation (Advanced Distributed Janus Development)

**Purpose.** Propose a method to produce a High Level Architecture (HLA) Simulation Object Model (SOM) for a procedurally implemented legacy simulation, and assess whether Janus can comply with HLA SOM requirements.

### **Main Assumptions.**

- Janus documentation and data bases are sufficiently detailed to capture SOM requirements.
- An HLA-compliant Janus would be developed if Janus could satisfy HLA standards.

**Scope of Study and Limitations.** The Department of Defense dictated that all computer simulations will be HLA compliant by 2001. This requirement prompted the U.S. Army Training and Doctrine Command Analysis Center to investigate the feasibility of including Janus in future HLA federations. As a procedural language, there are considerable challenges to make Janus HLA compliant. This study focused on developing a methodology to produce a SOM from a procedurally implemented language.

The development of the Janus SOM was limited to the extent of data base documentation and knowledge of Janus algorithms.

**Principal Findings.** The study concludes that the proposed method can be used to produce a HLA SOM for procedural legacy simulations. Applying the proposed method resulted in a Janus SOM, a required product of an HLA-compliant simulation. The study also identified difficulties with modifying a legacy simulation so that it can operate in a HLA federation. One such difficulty may be the federate's object representation of man-platforms. For instance, one federate may represent smoke as a series of geometric shapes with several attributes, whereas another federate may portray smoke with only height and width attributes. Interoperability between these two simulations regarding smoke may be very difficult.

**Impact of this Effort.** This study is a major step towards developing a HLA Janus. The Janus object model developed in this study can be used to develop other Janus simulation object models, thus providing significant flexibility for Janus to enter into different types of HLA federations.

Also, after briefing this study at simulation conferences, several other developers faced with converting their legacy model to HLA requested further information about findings and time frame to complete the Janus object model.

**Quality of Contractor Performance.** Contractor support from Rolands and Associates (R&A) was exceptional. R&A provided immediate and accurate response to all World Modeler connectivity issues and JLink code recommendations.

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**DTIC.** (DTIC number not yet assigned).

**Personnel Briefed.**

- Mr. Bauman, Director, TRAC, APR 97.
- Mr. Roy Reynolds, Director, TRAC-WSMR, APR 97.

**Conference Presentations.**

- Simulation Interoperability Workshop, MAR 97.
- Simulation Interoperability Workshop, AUG 97

**Conference Proceedings.** Presentations addressing simulation interoperability issues and newly developed tools to improve interoperability.

**Journal Publications.** None currently.